Hubble returns dynamic images of other galaxies, stars during '96

(Continued from Page 1)

showed images of galaxies colliding, the surface of Pluto and the birth of stars during 1996.

In April, Hubble sent back dramatic images of gigantic tadpole-shaped objects surrounding a dying star. The "cometary knots" are probably the result of a dying star's final outbursts, seen in the Helix nebula. The Space Telescope continues on track for measuring the expansion of the universe, sending back information that fine-tunes the Hubble Constant. Scientists are using the telescope to try and place the Hubble Constant to within a ten percent accuracy.

Compiling a "cosmic movie" of the Crab Nebula, Hubble found the Nebula even more dynamic than previously understood. Hubble measured the diameters of a special class of pulsating star called Mira variables, which rhythmically change size. At 11 billion light-years away, they existed during the epoch when it is commonly believed galaxies started to form. Hubble concluded the gigantic, old stars are not round but rather egg-shaped. That discovery may preview the fate of our Sun five billion years from now.

Hubble also surveyed the "homes" of quasars, showing that they live in a remarkable variety of galaxies, many of which are violently colliding. The complicated image Hubble sent back suggests there may be a variety of mechanisms for "turning on" quasars, the universe's most energetic objects.

Hubble introduced us to images of what may be galaxies under construction in the early universe, being made out of a long sought ancient population of "galactic building blocks." Those images show a grouping of 18 gigantic star clusters that appear to be the same distance from Earth, and close enough to each other that they will eventually merge into a few galaxy-sized objects.

In October, Hubble followed the spectacular dance of Jupiter's aurora, allowing astronomers to map Jupiter's immense magnetic field and better understand how it generates such phenomena.

In a quest for a faster, better, cheaper access to space in the 21st Century, Vice President Al Gore and Goldin announced that Lockheed Martin was selected to build the X-33 technology demonstration vehicle, a one-half scale prototype of the Reusable Launch Vehicle which will be used to demonstrate advanced technologies that will dramatically increase reliability and lower the costs of putting payloads into space.

Lockheed Martin will design, build and conduct the first test flight of the X-33 test vehicle by March 1999, and conduct up to fifteen flights by December 1999. NASA has budgeted $941 million for the project through 1999, with Lockheed Martin contributing over $200 million. Called "Venture Star," the unpiloted vehicle will launch vertically like a rocket and land horizontally like an airplane.

Test subjects needed for blood analysis

The Human Test Subject Facility at JSC is currently recruiting volunteers to participate in astronaut and cosmonaut blood-draw training sessions.

This activity, approved by the JSC Medical Sciences' Institutional Review Board, provides crew members with the opportunity to gain proficiency in venipuncture blood collection techniques. Crew members on future shuttle missions as well as cosmonauts participating in the joint U.S./Russian endeavors will participate in these training sessions if in-flight blood collections are required during their mission.

Volunteers must be in good health and pass the required physical exam. Volunteers should be healthy individuals, 21-50 years old, height/weight proportionate that are not taking any medications, and have no major health problems.

Prior to participation, a volunteer will receive a briefing so he/she fully understands what will be happening. An average crew training session takes 15-30 minutes per volunteer, and volunteers may be compensated for their time.

To volunteer or for details, contact Linda or Rori at x37284.

Computer fair prices still available

The vendors who recently participated in JSC Exchange's Computer Fair have agreed to extended their offer for special deals on computers.

"The computer fair was a big hit with all who participated," said organizer Karl Schuler. "Over 85 computers were sold, and the Exchange has received a number of inquires from folks asking if they can purchase a computer after the fair. In response, we're shifting to a "virtual" fair and will keep the Computer Fair's home page running until mid March."

Schuler said that the vendors agreed not to raise prices for the next 90 days. Buyers will need to reference the computer fair when they follow-up with the vendors.

"We're also forming partnerships with other agency Exchanges and will be auctioning two computer systems sometime in January if all goes according to plan," he added.

M and A Technology and Applied Computer Technologies—two of the vendors who have been involved with the center's recent computer block buys—are offering special deals to employees through March. In addition, the JSC Federal Credit Union has special provisions for loans on electronic equipment.

These special prices are open to all NASA civil servants, contractors and retired personnel. For more information, reference the recent computer fair's home page at the following URL: http://hro.jsc.nasa.gov/hro/eaa/The_EAA_Computer_Fair.HTML or call the Exchange or Schuler at x33031.

From left, Neha Mehta, a senior at South Houston High School accepts congratulations from chief judge Mark Morgan after winning the American Free Enterprise Speech contest.

Local students cash in during speech contest

A South Houston senior took home a $300 savings bond last month and a chance to win another $10,000 bond.

Neha Mehta took first place with a speech about the American dollar bill in the American Enterprise Speech Contest hosted by the Lockheed-Martin National Management Association last month at the Gilruth Center. Mehta will represent the NMA chapter at the Texas Gulf Coast Council competition in March. Mehta has been to the National's as an ambassador and has experience in speech and math competitions and varsity tennis.

The second place $200 bond went to Shane Carter and the third place $100 bond went to Kevin Held, both seniors at Friendswood High School.

The Clear Lake Communicators, Toastmasters International judged the eight entrants. The students were judged on speech development, purpose and value of the speech, delivery and language. The purpose of the contest is to promote a better understanding of the American Enterprise System among high school students. Involving youth in research, writing and delivery of a speech on the economic system can increase awareness in the importance of a free economy and helps develop communication skills that are vital to individuals entering the workforce.

Changes to effect Gilruth, cafeteria

Changes to fee structures and services at the Gilruth Center and JSC cafeterias recommended last year by the JSC Exchange Council are now in effect.

Employees will need badges to use the Gilruth Center weight room, gym, tennis courts, leisure classes or to participate in organized sports. Existing badges will be honored until they expire except for use of the weight room. The annual fee for badges except for the weight room is $10. Badges may be purchased by NASA/contractor employees; their dependents or spouses; retirees and spouses; and other government employees with NASA issued badges. Outside users also may purchase badges that will allow them to participate in organized sports and leisure classes only at a cost of $25.

The annual fee for use of the weight room will be $90. There will not be an additional $10 badge charge. The fee for a second, or more, family member will be $50 each. Badges/membership for use of the weight room are available to NASA employees, retirees and contractors and their spouses and eligible dependents. Weight room badges/memberships may be used for all Gilruth activities.

Fees for league sports will be $315 for basketball; $175 for volleyball; $335 for flag football; $275 for soccer; $275 for softball; and $200 for recreational softball. There will be a single fee structure for all teams and each participant will be required to have purchased a Gilruth Center badge. All badges and membership fees may be purchased at the Gilruth Center office in Bldg. 207. Questions can be directed to the Gilruth Recreation Director, Eddy Rodriguez at x35789, or the EAA Vice President for Athletics, Bob Musgrove at x33057.

In addition the cafeteria will change its hours of operations in the new year. The cafeteria will be open from 7-10 a.m. for breakfast and 11 a.m-1:30 p.m. for lunch. The Gilruth Center will be open 6:30 a.m.-10:00 p.m. Monday - Friday, and 9 a.m.-1 p.m. on Saturday.

Other changes in the near future include:

- Remodeling of the cafeterias to improve lighting, reduce noise and update the serving and seating areas at both cafeterias;
- Reopening the JSC Exchange Store in the Bldg. 3 cafeteria and broadening the inventory of store items;
- Increasing the choice and availability of event tickets offered through the stores;
- Opening up food service at the Gilruth Center to off-site commercial caterers and restaurants to broaden choices for groups planning events;
- Increasing the opportunities for organizations to use the Gilruth Center facilities for "pot luck" dinners;
- Providing contractor involvement and input through representation on the Exchange Council; and
- Adding new "heart healthy" items on the cafeteria menus.

Blaha vows to help build space station in '97

(Continued from Page 1)

have traditional cakes and other dishes, lamb, pork and a wonderful dessert, as well as Italian food, macaroni and cheese, and other things."

Reporters asked Blaha whether he would make any New Year's resolutions.

"I haven't thought about that, but you ask me the question so I'll do my best to answer." He said. "I think any New Year's resolution I would make is that I hope the space program and this space station and a replacement for it, which we call the International Space Station, we continue to build. It's certainly the right thing to do. Space plays a vital role in our society, so my New Year's resolution would be that I wish we continue pressing forward with this. From a personal note, I've learned a lot up here. Maybe when I return to Earth I'll try to apply some of it to try and be a nicer human being."

Before the holidays the crew spent time performing housekeeping and maintenance chores. Science activities included monitoring of the BioTechnology System, including the visual inspection of the growth of bovine cartilage cells, as well as sampling of the media in the BTS. The crew performed a direct feed of the growth media to the cartilage cells and sampling of the media in the BTS.

The BioTechnology System is a facility that will be used throughout joint U.S. - Russian flights to grow tissues in microgravity. On this mission, bovine, or cow cartilage is being grown. By growing cartilage in microgravity, researchers will obtain a better three-dimensional model which they can compare to cells grown on the Earth, helping to determine how cells grow in different environments. Researchers say this kind of research, not possible because of the gravity on Earth, eventually may lead to development of new drugs or medical procedures.

The crew also monitored a second wheat crop growing in the Mir greenhouse. Air being drawn into the greenhouse returned to normal temperatures, approximately 25 degrees Celsius, and will be monitored daily for fluctuations that could affect plant growth. The sprouts that were planted on Dec. 6, were around 12 centimeters in height, showing somewhat rapid growth rate.

A Mir Structural Dynamics Experiment studying the night to day transition vibrations of Mir was performed. Several more sessions measuring the vibrations of Mir during exercise, and the docking and undocking of space shuttles are planned.

Throughout his four-month stay on Mir, Blaha exercises daily and explained his regime to reporters.

"I do an exercise regime here daily that the Russians have been doing on this space station for now 11 years," Blaha said. "That is, we have a treadmill here [in the base block] and a treadmill in the Kristall module. You set a particular load on there and run for a certain period at different paces, you walk, you run.... In between you use expanders for different muscle groups in your legs, neck, arms, shoulders, and waist. It's a program they have developed over the years. It's a very good program. That's one exercise, and it takes about an hour to accomplish.

"Another thing we do on the same day, about six hours later we ride on the bicycle. We do that for our cardiovascular systems. We ride a different schedule of times and loads and we do that for a period of about 45 minutes and that also is very good. So one of the exercises is for muscles and the other is for cardiovascular health.

'I might say, I think it's an excellent program and I highly recommend that we start with that program on the [International] Space Station. As to how I think I will feel when I return to Earth, I don't know. That's a very individual thing and different people have different reactions to returning to Earth. That's why we continue to do [cardiovascular] experiments, to try to understand why there are differences in different people when the come back to Earth. In the past on shuttle flights I haven't had a problem, but I may have a vestibular problem when I return this time. I don't know; we'll have to wait and find out."

NASA-JSC